

CLAIMS

What is claimed is:

1. A method comprising:
forming a barrier layer on a substrate surface including at least one contact opening;
forming an interconnect in the contact opening; and
reducing the electrical conductivity of the barrier layer.
2. The method of claim 1, wherein reducing the electrical conductivity comprises oxidizing a material of the barrier layer.
3. The method of claim 1, wherein the substrate surface comprises a dielectric layer and the contact opening comprises a via through the dielectric layer to a contact point.
4. The method of claim 3, wherein the contact opening further comprises a trench and forming an interconnect comprises depositing a conductive material in the via and filling the trench.
5. The method of claim 4, wherein depositing the conductive material comprises:
electroplating;
removing a portion of the conductive material in the contact opening; and
electroless plating selectively for the conductive material.
6. The method of claim 5, wherein electroless plating comprises:
plating a first material; and
plating a second material on the first material.
7. A method comprising:
forming a barrier layer on a substrate surface including a dielectric layer and a contact opening;
depositing a conductive material in the contact opening;

removing the conductive material sufficient to expose the barrier layer on the substrate surface; and

reducing the electrical conductivity of the barrier layer.

8. The method of claim 7, wherein reducing the electrical conductivity comprises oxidizing a material of the barrier layer.

9. The method of claim 7, wherein depositing the conductive material comprises:
electroplating;
removing a portion of the conductive material in the contact opening; and
electroless plating selectively for the conductive material.

10. The method of claim 9, wherein electroless plating comprises:
plating a first material; and

plating a second material on the first material.

11. The method of claim 9, wherein the contact opening comprises a via to a contact point and a trench, and removing a portion of the conductive material comprises removing a portion of the conductive material within the trench.

12. An apparatus comprising:
a circuit substrate comprising at least one active layer including at least one contact point;
a dielectric layer on the at least one active layer;
a barrier layer on a surface of the dielectric layer, a portion of the barrier layer having been transformed from a first electrical conductivity to a second different and reduced electrical conductivity; and
an interconnect coupled to the at least one contact point.

13. The apparatus of claim 12, wherein the dielectric layer comprises a material having a dielectric constant than a dielectric constant of silicon dioxide.

14. The apparatus of claim 12, wherein the interconnect is formed within the dielectric layer and the portion of the barrier layer that is transformed comprises the portion on the surface of the dielectric layer.

15. The apparatus of claim 14, wherein the dielectric layer comprises a first dielectric layer, the apparatus further comprising at least a second dielectric layer formed on the first dielectric layer.